CLAIMS

In the Claims:

1. (Currently Amended) A method for the prediction and optimization of a communications system comprising:

inputting data from a plurality of channels of the communications system;

predicting a performance of at least one of the plurality of channels using a plurality of parameters to characterize the performance of the channel;

creating at least one transfer function model of the at least one of the plurality of channels, wherein the transfer function model is simulated without use of direct measurements across the at least one of the plurality of channels; and

optimizing the parameters of at least one of the plurality of channels in order to improve a bit rate of the at least one of the plurality of channels in the communications system.

2. (Currently Amended) The method claim 1 wherein predicting the performance of the at least one of the plurality of channels comprises:

inputting data from at least one channel of the communications system into a prediction module;

~~creating at least one transfer function model of the at least one channel;~~

determining an impairment on the at least one channel;

characterizing the at least one channel using the at least one transfer function model and the impairment.

3. (Currently Amended) The method of claim 2 wherein the at least one transfer function model is ~~created~~ simulated using physical configuration information of the communications system.

4. (Currently Amended) The method of claim 2 wherein the at least one transfer function model is ~~created~~ simulated using a spectrum management system.

5. (Cancelled)

Previously added

6. (~~New~~) The method of claim 2 wherein the impairment is selected from the group consisting of: a cross-talk impairment, an AM radio interference, a temperature impairment, and any combination thereof.

7. (Previously Added) The method of claim 1 wherein optimizing the parameters comprises:

a) choosing a first parameter for the channel;

b) choosing a second parameter for the channel;

c) determining an optimization criteria for the channel based upon the first parameter and the second parameter;

d) repeating a) – c) until the optimization criteria is optimized for the communications system.

8. (Previously Added) The method of claim 1 wherein the communications system is a wireline communications system.

9. (Previously Added) The method of claim 1 wherein the communications system is a wireless communications system.

10. (Previously Added) The method of claim 1 wherein the communications system is an optical communications system.

11. (Previously Added) The method of claim 1 wherein the communications system is a cable communications system.

12. (Previously Added) The method of claim 1 wherein the communications system is a DSL communications system.

13. (Currently Amended) A system for the prediction and optimization of a communications system comprising:

a prediction module, wherein the prediction module predicts the performance of at least one channel in the communications system by providing a characterization of at least one parameter that describes the channel, and wherein the prediction module creates at least one transfer function model of the at least one channel such that the transfer function model is simulated without use of direct measurements across the at least one channel; and

an optimization module, wherein the optimization module finds the optimum characterization for the channel based on at least one design criteria.

14. (Previously Added) The system of claim 13 wherein the design criteria are selected from the group consisting of: a cost of deployment, a signal to noise ratio, a total revenue, a bit rate, and any combination thereof.

15. (Previously Added) The system of claim 13 wherein the communications system is a wireline communications system.

16. (Previously Added) The system of claim 13 wherein the communications system is a wireless communications system.

17. (Previously Added) The system of claim 13 wherein the communications system is an optical communications system.

18. (Previously Added) The system of claim 13 wherein the communications system is a cable communications system.

19. (Previously Added) The system of claim 13 wherein the communications system is a DSL communications system.

20. (Currently Amended) A method for the prediction of the performance of a communications system comprising:

inputting data from at least one channel of the communications system into a prediction module;

creating at least one transfer function model of the at least one channel, wherein the transfer function model is simulated without use of direct measurements across the at least one channel;

determining an impairment on the at least one channel;

characterizing the at least one channel using the at least one transfer function model and the impairment.

21. (Currently Amended) The method of claim 20 wherein the at least one transfer function model is ~~created~~ simulated using physical configuration information of the communications system.

22. (Currently Amended) The method of claim 20 wherein the at least one transfer function model is ~~created~~ simulated using a spectrum management system.

23. (Cancelled)

24. (Previously Added) The method of claim 20 wherein the impairment is selected from the group consisting of: a cross-talk impairment, an AM radio interference, a temperature impairment, and any combination thereof.

25. (Previously Added) The method of claim 20 wherein the communications system is a wireline communications system.

26. (Previously Added) The method of claim 20 wherein the communications system is a wireless communications system.

27. (Previously Added) The method of claim 20 wherein the communications system is an optical communications system.

28. (Previously Added) The method of claim 20 wherein the communications system is a cable communications system.

29. (Previously Added) The method of claim 20 wherein the communications system is a DSL communications system.

30. (Currently Amended) A method for the prediction and optimization of a communications system comprising:

inputting data from at least one channel of the communications system;

creating at least one transfer function model of the at least one channel, wherein the transfer function model is simulated without use of direct measurements across the at least one channel;

predicting a performance of at least one of the channels using at least one parameter to characterize the performance of the channel; and

optimizing the at least one parameter of at least one of the channels in order to improve a bit rate of the at least one of the channels in the communications system.

31. (Currently Amended) The method claim 30 wherein predicting the performance of the at least one of the channels comprises:

inputting data from at least one channel of the communications system into a prediction module;

~~creating at least one transfer function model of the at least one channel;~~

determining an impairment on the at least one channel;

characterizing the at least one channel using the at least one transfer function model and the impairment.

32. (Currently Amended) The method of claim 31 wherein the at least one transfer function model is ~~created~~ simulated using physical configuration information of the communications system.

33. (Currently Amended) The method of claim 31 wherein the at least one transfer function model is ~~created~~ simulated using a spectrum management system.

34. (Cancelled)

35. (Previously Added) The method of claim 31 wherein the impairment is selected from the group consisting of: a cross-talk impairment, an AM radio interference, a temperature impairment, and any combination thereof.

36. (Previously Added) The method of claim 30 wherein optimizing the at least one parameter comprises:

a) choosing a first parameter for the channel;

b) choosing a second parameter for the channel;

c) determining an optimization criteria for the channel based upon the first parameter and the second parameter;

d) repeating a) – c) until the optimization criteria is optimized for the communications system.

37. (Previously Added) The method of claim 30 wherein the communications system is a wireline communications system.

38. (New) The method of claim 30 wherein the communications system is a wireless communications system.

39. (Previously Added) The method of claim 30 wherein the communications system is an optical communications system.

40. (Previously Added) The method of claim 30 wherein the communications system is a cable communications system.

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41. (Previously Added) The method of claim 30 wherein the communications system is a DSL communications system.